IN THE CLAIMS

Applicant has submitted a new complete claim set showing marked up claims with insertions indicated by underlining and deletions indicated by strikeouts and/or double bracketing.

Please amend pending claims 1, 2, 5, 8, 13, 14, and 15 as noted below.

1.   (Currently amended) A method of synthesizing a reverse model of a control system comprising:-

transforming a transition function of a state machine model of the control system into a constraint on the reverse model, wherein the reverse model is a reverse model of the state machine model; and

applying a parameterization of said constraint to all transitions of the reverse model.

2.   (Currently amended) A method of synthesizing a reverse model of an electronic circuit, the method comprising:

transforming a transition function of a state machine model of said electronic circuit into a constraint on the reverse model, wherein the reverse model is a reverse model of the state machine model; and

applying a parameterization of said constraint to all transitions of the reverse model.

3.   (Original) The method as claimed in claim 2 wherein said electronic circuit includes a logic circuits.

4.   (Original) The method as claimed in claim 2 wherein said electronic circuit includes a microprocessor.

5.   (Currently amended) A method of calculating a the post-image in a control system, the method comprising:

forming a reverse model of said control system, wherein the reverse model is a reverse model of a state machine model of the control system; and

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calculating a ~~the~~ pre-image in said reverse model, wherein the pre-image in said reverse model is equivalent to the post-image in said control system.

6.   (Original) The method of claim 5 further comprising identifying from a characterization of a model of said control system, transitions of said control system and reversing said transitions to form potential transitions of a reverse model.

7.   (Original) The method of claim 5 and further comprising extracting from a characterization of a model of said control system, transition functions of said control system.

8.   (Currently amended) A method of calculating a ~~the~~ post-image in an electronic circuit, the method comprising:

forming a reverse model of said electronic circuit, <u>wherein the reverse model is a reverse model of a state machine model of the electronic circuit</u>; and

calculating a ~~the~~ pre-image in said reverse model, wherein the pre-image in said reverse model is equivalent to the post-image in said electronic circuit.

9.   (Original) The method as claimed in claim 8 wherein said electronic circuit includes a logic circuits.

10.   (Original) The method as claimed in claim 8 wherein said electronic circuit includes a microprocessor.

11.   (Original) The method of claim 8 further comprising identifying from a characterization of a model of said electronic circuit, transitions of said electronic circuit and reversing said transitions to form potential transitions of a reverse model.

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12.   (Original) The method of claim 8 and further comprising extracting from a characterization of a model of said electronic circuit, transition functions of said electronic circuit.

13.   (Currently amended) A device for synthesizing a reverse model of an electronic circuit, the device comprising:

a first store storing bits representative of transition functions of <u>a state machine model</u> <u>of</u> said electronic circuit;

a second store storing bits representative of an estimate of transition functions of said reverse model; and

a processing system comprising

a logical device for transforming said transition functions of <u>the state machine</u> <u>model of</u> said electronic circuit into constraints on said reverse model<u>, wherein the reverse</u> <u>model is a reverse model of the state machine model</u>; and

a parameterization processor for applying a parameterization of said constraints to said estimate of transition functions of said reverse <u>model</u> system to form transition functions of said reverse model.

14.   (Currently amended) A device for calculating <u>a</u> the post-image in an electronic circuit comprising:

a third store storing bits representative of transition functions of a reverse model of said electronic circuit;

a fourth store storing bits representative of a set of states of <u>a state machine model of</u> said electronic circuit; and

a forming device substituting the state variables of the reverse model by the transition functions of the reverse model to provide a new set of states representing the pre-image of said reverse model, and thus provide the post-image in said electronic circuit.

15.   (Currently amended) A device as claimed in claim 14 further comprising a first store storing bits representative of transition functions of said electronic circuit;

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a second store storing bits representative of an estimate of transition functions of said reverse model;

a logical device for transforming said transition functions of said electronic circuit into constraints on said reverse models; and

a parameterization processor for applying a parameterization of said constraints to said estimate of transition functions of the reverse model system to form transition functions of said reverse model.

16.   (Original) A device as claimed in claim 13 wherein said estimate of transition functions of said reverse model comprises previous state variables of said electronic circuit.

17.   (Original) A device as claimed in claim 15 wherein said estimate of transition functions of said reverse model comprises previous state variables of said electronic circuit.

18.   (Original) The device as claimed in claim 13 wherein said electronic circuit includes a logic circuits.

19.   (Original) The device as claimed in claim 13 wherein said electronic circuit includes a microprocessor.

20.   (Original) The device as claimed in claim 14 wherein said electronic circuit includes a logic circuits.

21.   (Original) The device as claimed in claim 14 wherein said electronic circuit includes a microprocessor.